



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D5609-1

Job Sheet 182095

Accounting Job RD17-1048-01



Part No: D5609-1

Job Qty: 1 ea

Part Name: EC130 Fwd Crosstube



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 8/17/18

Job Tracking No:

Due Date: 8/24/18

Created By: Marie Lajeunesse

Type: R+D

Description:

Note: D5609 REV.A9 IPP REV:A 18.06.20 NEW ISSUE DD VERF:JFS

Ship Via:

POSITIVE RECALL

EFFECTIVE 17 2018
RELEASED 9 9-89 DATE 18-10-2018

OK Rev A
ECN 18-37

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Purchasing	1 pcs	8/24/18	8/24/18	0.00	0.00	Purchasing		SEP 18 2018
120	Packaging	1 pcs	8/24/18	8/24/18	0.00	0.00	Packaging2		SEP 18 2018
130	QC	1 pcs	8/24/18	8/24/18	0.00	0.00	QC6		61 38
140	Packaging	1 pcs	8/24/18	8/24/18	0.00	0.00	Packaging3-1		21 9-89 9-89
150	QC21-FG	1 Ea	8/24/18	8/24/18	0.00	0.00	QC21		SEP 20 2018

Part Op 110 - Issue P/O to Parker Fab: **PO 40303** Manufacture D5609-1 as per dwg (Bend, Remove excess material after Descriptions: bending) **Ship extrusion D6029-120** **AS PER DWG NOTE 10, EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.*** Material release note is required
120 - Ensure material release note is attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6029-120	Tube, Seamless	1 Ea (1 ea)	110-Purchasing	5111229
D5609-1P	EC130 Fwd Crosstube	1 pcs (1 ea)	120-Packaging	5111228

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Purchasing	D6029-120	1	31	0
120-Packaging	D5609-1P	1	0	0

Part Specifications



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

could not be found.

Plex 8/17/18 10:11 AM Dart.lajeunesse.marie

Container No: S111230



Part: D5609-1

Job No: 182095

Serial No/Batch: S111230

Revision: A9

Inspector:

Exp Date:

Instructions:

Date: 09/18/18

DQA: _____ Date: _____

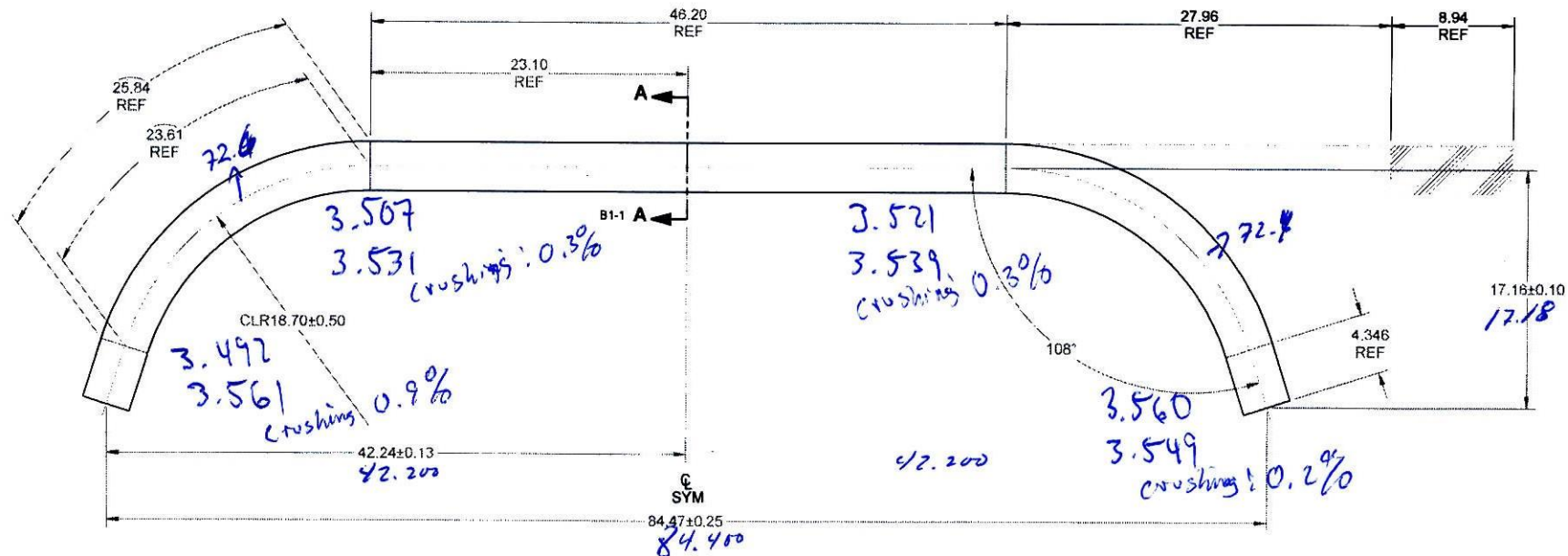


WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

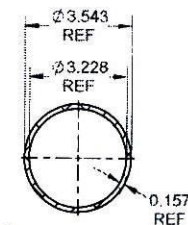
Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabelled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER.: _____					



D5609-1 EC130 FWD X-TUBE

Accepted by
N.O.

SHOT COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER



NOTES:

- 1) MATERIAL: MAKE FROM D6029-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044
- 7) WEIGHT: 17.36lbs
- 8) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE SHALL BE NO LARGER THAN 0.25.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.

PRELIMINARY ISSUE

REV.	NEW ISSUE	DESCRIPTION	ZF	18.05.04
DESIGN	NO		BY	DATE
DRAWN	ZF			
CHECKED	NO	DART AEROSPACE LTD		REV. A9
MFG. APPR.	DP	HAWKESBURY, ONTARIO, CANADA		SHEET 1 OF 1
APPROVED		D5609		SCALE
DE APPR.		EC130 FWD X-TUBE		NTS
DATE	18.05.04			

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Supplier: PAR005-VU
Parker Fabrication Inc
501 East Courtland
Morton, IL 61550-9043 USA
Phone: 309-266-8413
Fax: 309-266-7231

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO040303
PO Date: 6/22/18
Due Date: 9/18/18
Purchase Order Revision: 2
Revision Date: 9/13/18
Ship-To Contact: Hemmerich, Steven
Phone: 613-632-5200 Ext: 281
shemmerich@dartaero.com
Pymt Terms: Net 30
Freight Terms: Collect
Special Comments:

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1		D5611-1P			EC130 Skidtube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX SEP 18 2018													
w/o183180													
Line Item Note Advance notice required for Quality audit.													
IX	SEP 18 2018			w/o183181	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183182	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183183	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183184	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183185	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183186	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183187	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
Sub Total:									8	0	8	\$4,022.00	



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
2		D5609-1P			EC130 Fwd Crosstube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	8/31/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
					w/o 182096								

1X SEP 18 2018

Line Item Note Advance notice required for Quality audit.

1X SEP 18 2018	w/o 182093	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
1X SEP 18 2018	w/o 182094	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
1X SEP 18 2018	w/o 182095	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
Sub Total:					4	0	4		\$2,893.04

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Grand Total: \$6,915.04

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/14/18 10:59 AM dart.hemmerich.steven



Parker Fabrication, Inc.
501 East Courtland
Morton, IL 61550-9043

Ph: 309.266.8413

Fax: 309.266.7231

2 of 2

Pack List

Number: **119663**

Date: 17-Sep-18

Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ship To

Steven Hemmerich
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ph: 1 613 632-5200

Ph: 1 613 632-5200

Ship Via

Freight Collect

Quantity	Description	Rev:
8 ca	Part: EC130SKID EC130 Skidtube rev. A10 SO: 69748	Rev: Line: 001
4 ca	Part: EC130FWD EC130 Fwd X Tube rev. A9 SO: 69748	Rev: Line: 002
Thank you for your business!		

PO: PO040303

Line: 001

PO: PO040303

Line: 002

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DAS
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Certificate of Conformance (CoC)

Form F-4003
Page 1 of 1
Last Revised:
3/09/2018

Supplier Name: Parker Fabrication
Supplier Number: _____
Part Description: EC130 FWD X-Tube

Part Number: D5609
Drawing Number: D5609

Revision: A9

Purchase Order #: PO040303
Quantity: 4

Serial Number(s): 207295 (if applicable)

Lot/Heat Number: S078753 (if applicable)

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9-89

DAS
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9-89

All technical requirements of the contract are satisfied. Quality and performance are in accordance with the contract, the specifications, and all references and associated contractual drawings and documents.

I, as a supplier to Dart Aerospace LTD, acknowledge and certify the material covered under this document is produced in accordance with the following:

- ☒ All Contractual "Flow Down" Requirements
- ☒ Supplier Standards Guide
- ☒ Global Supplier Quality Manual
- ☒ Product Conformance
- ☒ Free of Counterfeit Material

(Acknowledge by marking the boxes)


Signature

Quality Manager
Title

9/17/2018
Completion Date

This certifies the parts/items/materials identified above conform to all applicable drawings and/or specifications as evidenced by reports or other documentation on file and all other purchase order and quality requirements have been met.

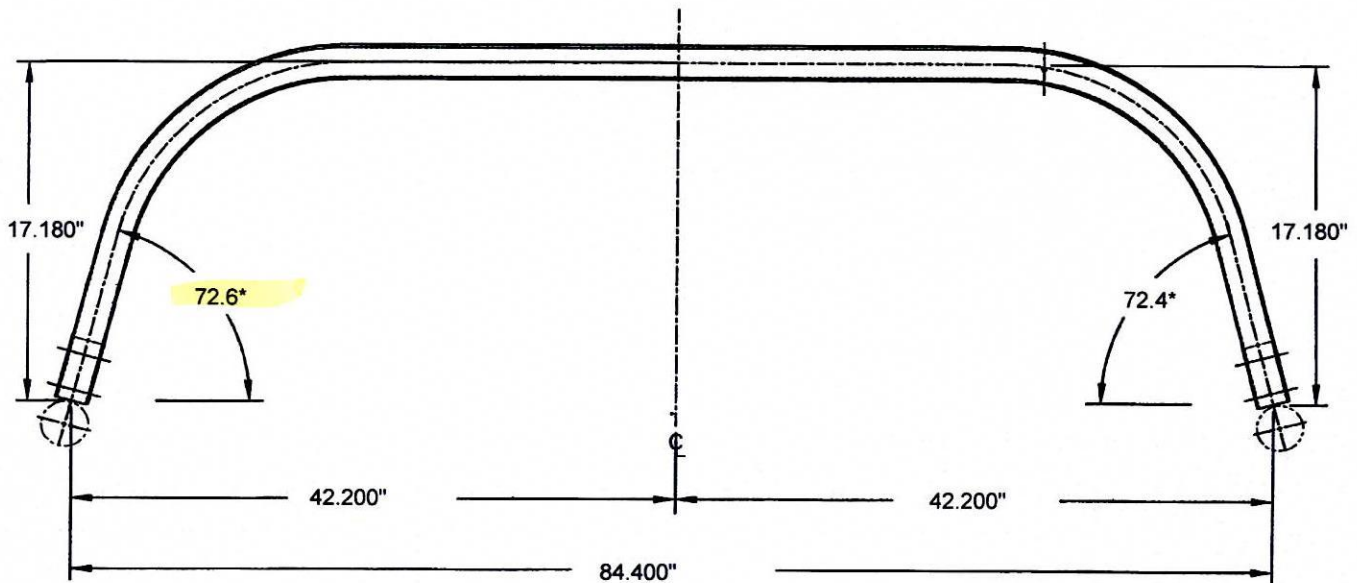
Production Part Approval Dimensional Test Results

[illegible]

DART AEROSPACE LTD		Work Order:	
		Serial Number	
Description: EC 130 FWD Cross Tube		Part Number:	D5609-1
Inspection Dwg: D5609	Rev: PA9		Page 2 of 2

Required Dimension	Min	Max
Height	17.06"	17.26"
1/2 Span	42.11"	42.37"
Angle	71°	73°
Total Span	84.22"	84.72"

AP 13/5/24 Acceptable per Rev.A



Measured by: DPZ	Checked by: EB	QC Inspector: DAS
Date:	Date: 18-09-19	Date: 16-09-19

Engineering Approval: (If necessary)	AP	Date: 16/9/24
--	----	----------------------

Rev	Date	Change	Revised by	Approved
A	18/09/20	New Issue	ED	

DART AEROSPACE LTD		Work Order:	182095
		Serial Number	S111230
Description: EC 130 FWD Cross Tube		Part Number:	D5609-1
Inspection Dwg: D5609	Rev: PA9		Page 1 of 2

Parker Fab - PO040303 TUBE #2

INSPECTION SHEET

WALL THICKNESS MEASUREMENTS

LOCATION FROM CL	DWG DIM	R1	R2	R3	R4				
CL	0.157"								
21"	0.157"								
21"	0.157"								
CENTER OF BEND	0.157"								
CENTER OF BEND	0.157"								

OUTSIDE DIAMETER MEASUREMENTS

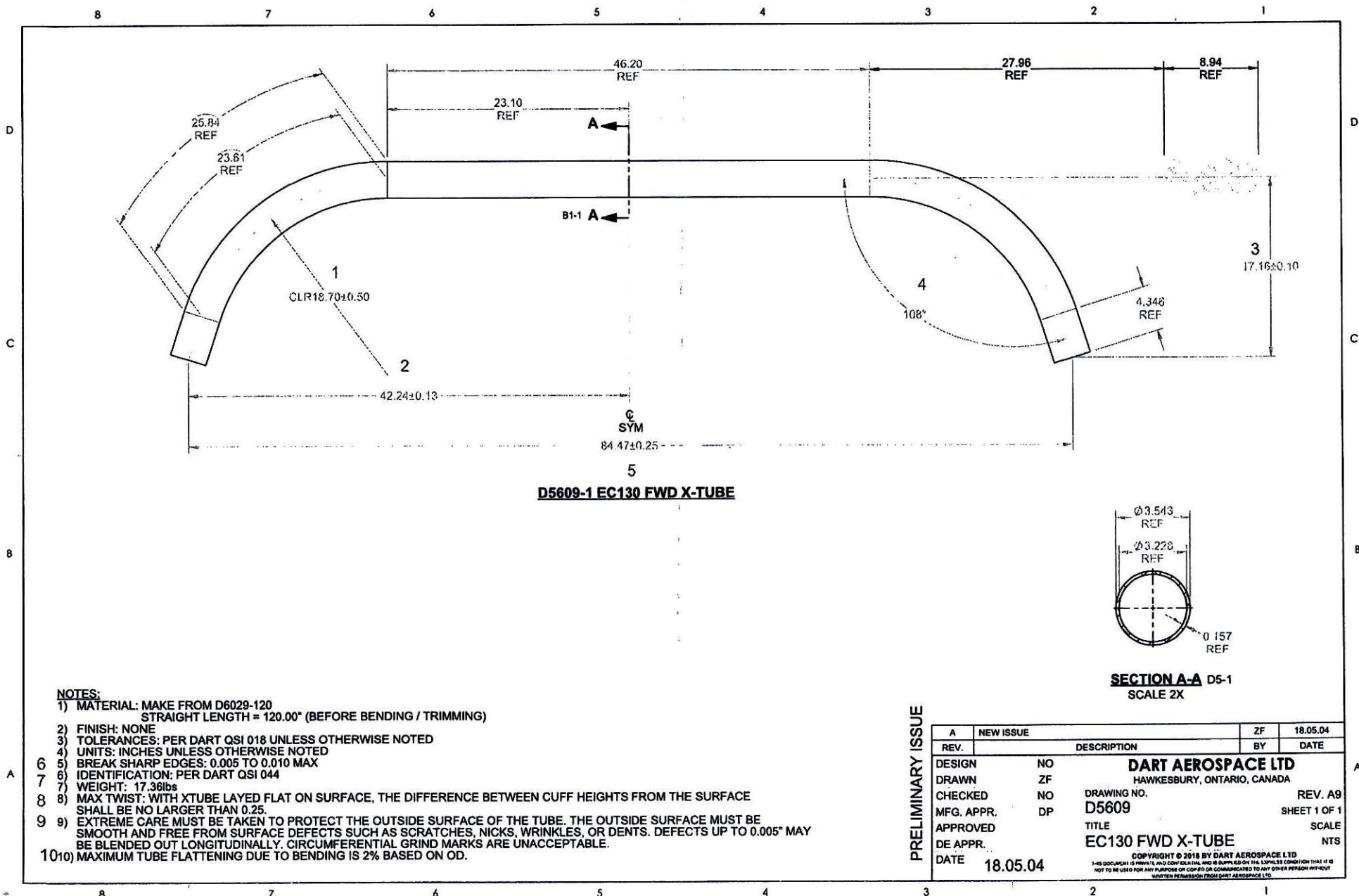
LOCATION	DWG DIM	M1	M2				
CL	3.543"						
CENTER OF BEND	3.543"						
CENTER OF BEND	3.543"						

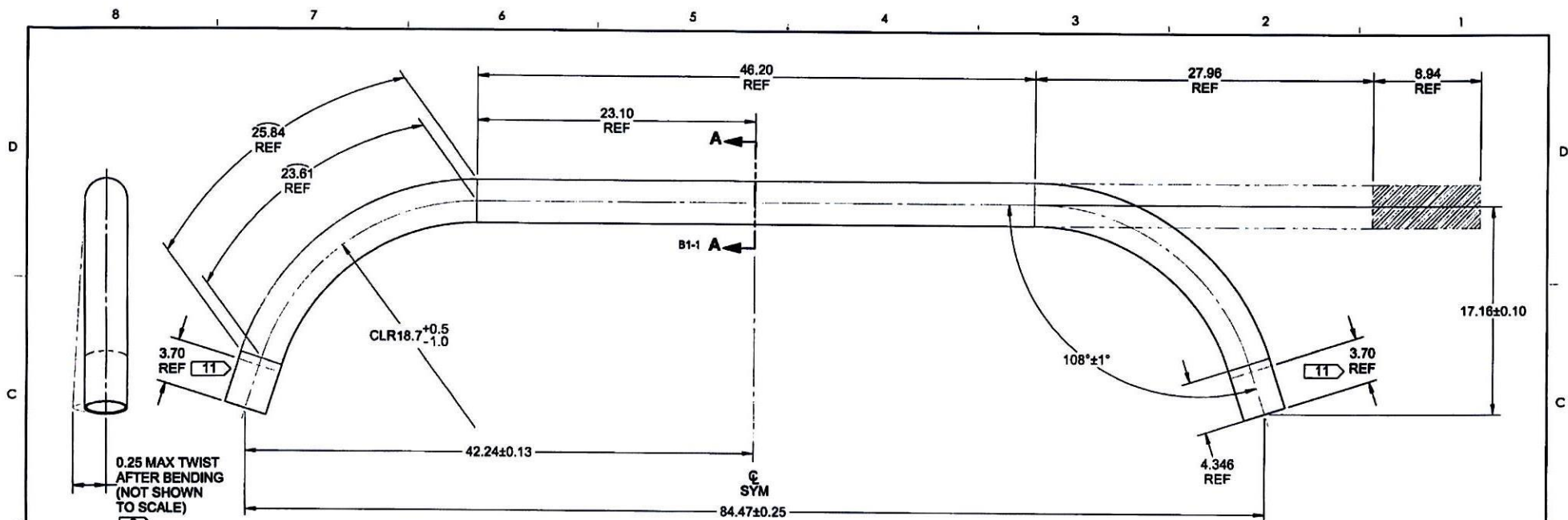
CRUSHING

MAX 2%	SIDE A	SIDE B
Top of Bend	0.3%	0.3%
Bottom of Bend	0.9%	0.2%

TWIST

	SIDE A	SIDE B
MAX 0.25"		

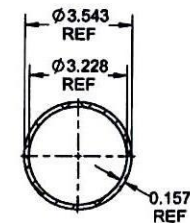




D5609-1 FWD X-TUBE (EC130)

RELEASED

2018 OCT 02
ECN 18-017



SECTION A-A D5-1
SCALE 2X

NOTES:

- 1) MATERIAL: MAKE FROM D6029-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044 6.1
- 7) WEIGHT: 17.38lbs
- 8) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE SHALL BE NO LARGER THAN 0.25.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 11) CHECK MIN ID USING TOOL DT10434 FOR 3.70 LENGTH.

APPROVED

REV.	NEW ISSUE	DESCRIPTION	ZF	18.05.04
DESIGN	NO			
DRAWN	ZF			
CHECKED	MW			
MFG. APPR.	JFS			
APPROVED	NO			
DE APPR.	CP			
DATE	18.05.04			

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. **D5609** REV. A
SHEET 1 OF 1

TITLE **FWD X-TUBE (EC130)** SCALE
NTS

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